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LAYING CYCLES IN BIRDS

Cole (Proc. Am. Soc. Zool. 1916: p. 32) reports on two distinct conditions shown in the cycle of egg-laying in birds. In one the number of eggs is definite and predetermined when laying begins; in the other it is indeterminate and the cessation of laying and beginning of brooding is determined by stimuli that operate during the process of laying. In the latter case the number of eggs in the nest operates as such a stimulus. If the eggs are removed as deposited the period will be lengthened. The pigeon and English sparrow illustrate the determinate, and the common fowl and the house wren the indeterminate cycle.

THE PINEAL GLAND AND PIGMENTATION

McCord and Allen (Jour. Exp. Zool., May 1917) give the results of experiments upon tadpoles through feeding upon pineal gland substance. It was found that such feeding had no effect upon pigmentation up to the tenth day. From this point to the end of metamorphosis animals fed upon pineal food, or absorbing acetone extracts from pineal gland through the gills and skin, pass through a striking cycle of pigment changes. Soon after feeding they begin to lose color and within thirty minutes all macroscopic appearance of pigment is lost. Unless more pineal substance is added complete restoration of color occurs in three to six hours.

Microscopic examination shows that the change is due to the aggregation of the pigment in the center of the large, branching, moss-like melanophores of the sub-epithelial tissues. It is found also that the pineal extracts cause contraction in smooth muscle fibres as well as in melanophores.

The theoretical bearing of these experiments comes from the view,—as is shown in some lizards,—that the original pineal body had an optical function. The possible adaptive value of pigment depends upon light. Eyes are essential controlling factors in the adjustment of color to the environment. But in many types there are still pigment changes even in blinded specimens. Theoretically the pineal body might retain enough of its light sensitiveness to be stimulated and thus to exert an influence upon the pigment cells.